



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,450	03/30/2004	Amitava Sengupta	2000.180	3166

29494 7590 04/13/2007  
HAMMER & HANF, PC  
3125 SPRINGBANK LANE  
SUITE G  
CHARLOTTE, NC 28226

EXAMINER
----------

MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
----------	--------------

1723

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/13/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/812,450

Applicant(s)

SENGUPTA ET AL.

Examiner

Krishnan S. Menon

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 10-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 10-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Claims 1,3-8 and 10-22 are pending as amended 3/29/07.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1,3-8 and 10-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1,3-8 and 10-22 are also rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. An exclusive feature on each of the ends caps to identify them from each-other, critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

The newly added limitations in the independent claims are considered as new matter, and also lack enablement, because, no disclosure could be found in the specification and claims as originally filed to support the limitations: "first end cap being attached exclusively to the first end of said shell" and "second end cap being attached exclusively to said second end of the shell". The cited lines in the specification and

Art Unit: 1723

figure 1 do not provide support for this claim language. Figure 1 shows end caps 26 and 28, which are depicted as identical. Therefore one of ordinary skill in the art would not be able to make out any thing exclusive about them so that end cap 26 could be attached only to end 21 and end cap 28 could be attached only to end 23.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3-8 and 10-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al (US 6,616,841), with evidence from Kuzumoto (US 4,623,460); and alternately, over Kuzumoto in view of Cho.

Cho teaches a hollow fiber membrane cartridge and a system for degassing as claimed – see figures, especially figure 4. The membrane is in the form of a fabric (abstract), and is wound around the perforated core (12). The membrane lumen is open only on one end in figure 4. The core is plugged on one end (by the tube sheet (26), but is not the same end as claimed, which eliminates the “first” end cap in the reference figure 4. However, this difference in the claims is only an obvious equivalent of the teaching of the reference unless applicant can show otherwise, with evidence. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ

532 (CCPA 1982). This construction of having the perforated tube plugged at the first end cap and attached from the second end cap, and lumen of the hollow fibers open at the first end cap is taught by Kuzumoto (US 4,623,460), and is already known in the art.

***With respect to the newly added limitation on 3/29/07***, i.e., the first and second end caps being exclusive to the first and second ends of the shell respectively, Cho's figure 4 does not show an end cap on the end, where the lumen of the hollow fibers are closed, because an end cap is not necessary at that end. Thus, Cho's end cap (15) is exclusive to the open end of the lumen of the hollow fibers. An end cap can be added to the end where the lumen of the hollow fibers are closed, if one were to change the orientation of the feed inlet tube (20) to have the feed inlet form that end, as is contemplated by the applicant, which would be obvious to one of ordinary skill in the art. Such design is also known in the prior arts, as evidence by Kuzumoto. It is also not patentable: a mere reversal of parts (In re Gazda 219 F.2d 449, 104 USPQ 400 (CCPA 1955) or rearrangement of parts (In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) and In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) is unpatentable.

The Cho reference teaches a system for degassing as claimed. The recitation of the liquid in the claim is not a patentable limitation. "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." In re Young, 75 F.2d 966, 25 USPQ

Art Unit: 1723

69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

The material of the shell, end caps, tube sheets, and plug being of the same material such as polyethylene is well known in the art as taught by Cho, and the reference incorporated by Cho (column 1 lines 8-12: US Patent 5,284,584: Huang et al: see abstract and column 1 lines 10-28 and column 5 lines 10-29: tube sheet, and other components of the cartridge made from polyolefin).

The dimensions such as length and diameter are not patentable limitations. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package "of appreciable size and weight requiring handling by a lift truck" where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) ("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled." 531 F.2d at 1053, 189 USPQ at 148.). *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art.

The baffle (claims 6,13) in the cartridge is taught by the reference – see baffle 50, figure 3. While figure 4 may not be showing the baffle, it would be obvious to one of ordinary skill in the art at the time of invention to have the baffle for the reason suggested by the reference, i.e., distribution of the fluids around the hollow fibers – see column 4 lines 40-45.

End caps welded to the shell is also not patentable – it is a process limitation in the product claim. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Finally, “for introducing a gas into a liquid” in claim 14 is an intended use limitation. A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Liquid and gas recited are contents in the apparatus for the process: *Ex parte Thibault*. Using hollow fibers to gasify a liquid is also known in the art as evidenced by Katou, et al (US 6,158,721).

Regarding claims 15 – 18, the shell opening in figure 4 is equivalent to the claimed shell opening at the mid point. Applicant has not disclosed any criticality of

having the shell opening exactly at the mid point of the shell, instead of what is taught by figure 4.

Claims 19-22 are broader than the corresponding claims 1, 7,8 and 14, and are unpatentable as shown.

*Alternately, the claims are unpatentable over Kuzumoto in view of Cho.*

Kuzumoto teaches a cartridge (figure 1) with a shell, first end cap (at 5) with first tube sheet (3), hollow fibers with lumen open at first end cap (5a), second end cap and second tube sheet (3') with lumen of the hollow fibers closed at second end cap (see abstract and column 1, lines 30-59), a perforated tube (8) which is plugged at the first end cap and open to the outside (7) at the second end cap for feed inlet, and a nozzle (9) on the shell for the non-permeate exit. Permeate taken out from the lumen of the hollow fibers through outlet (10).

With respect to the end caps being exclusive to the respective ends, Kuzumoto teaches such exclusivity as claimed and as disclosed by the applicant. See the end caps at both ends of figure 1.

Claims differ Kuzumoto in the hollow fiber fabric and all parts constructed of the same material. Cho teaches a similar membrane cartridge with hollow fiber fabric wound around the perforated tube and that all parts of the cartridge can be made of the same material as shown above. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Cho in the teaching of Kuzumoto because the Cho construction would afford mechanical support for, and uniform spacing

between, the hollow fibers, and choice of material as taught by Cho (incorporated reference to Huang) for chemical and temperature resistance for wider range of applicability. Remaining limitations in the independent claims are intended-use. Cho teaches the limitations in the dependent claims, as explained above.

### ***Response to Arguments***

Applicant's arguments filed 3/29/07 have been fully considered but they are not persuasive.

Arguments about the exclusivity of the end caps are not commensurate with the claims and the rejection. As shown in the rejection, first of all, applicant does not have ends caps exclusively identifiable with each end. Cho's figure 4 has an exclusive end cap for one end, the second end does not require an end cap. However, if one was to reverse the construction of the feed port in Cho, one may add an end cap, as is seen in the Kuzumoto reference. Kuzumoto reference has exclusive end caps, that is, as exclusive as claimed and disclosed by the applicant.

The declaration of Dr. Sengupta is insufficient to overcome the rejection of the pending claims over the Cho reference as pointed out in the previous office action.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1723

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Krishnan S Menon  
Primary Examiner  
Art Unit 1723  
4/11/07